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# A TRIP THROUGH
# The Whitin Machine Works
# at
# Whitinsville
Massachusetts U.S.A.
1925

Property of Robert K. Hamblin

Gave a copy of this book to
the Northbridge Historical Society
in
October 1995

John C. Whitin

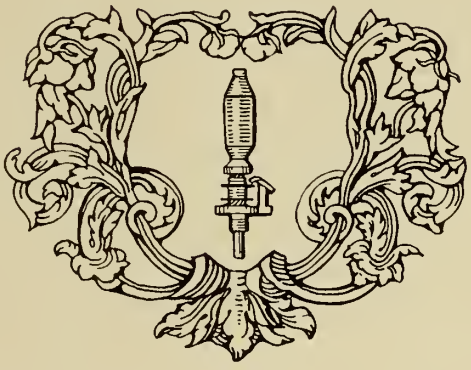
*Founder and President*

1830 – 1882

*A TRIP THROUGH THE*

# WHITIN MACHINE WORKS

*MANUFACTURERS OF TEXTILE MACHINERY*



ISSUED WITH

*The Compliments of the*

WHITIN MACHINE WORKS

*Established 1831 -- Incorporated 1868*

Main Office and Works: Whitinsville, Mass., U. S. A.

Southern Offices: Charlotte, N.C., and Atlanta, Ga.

1925

MAIN STREET LOOKING EAST

Bell Tower and Manufacturing Building No. 4 of the Whitin Machine Works

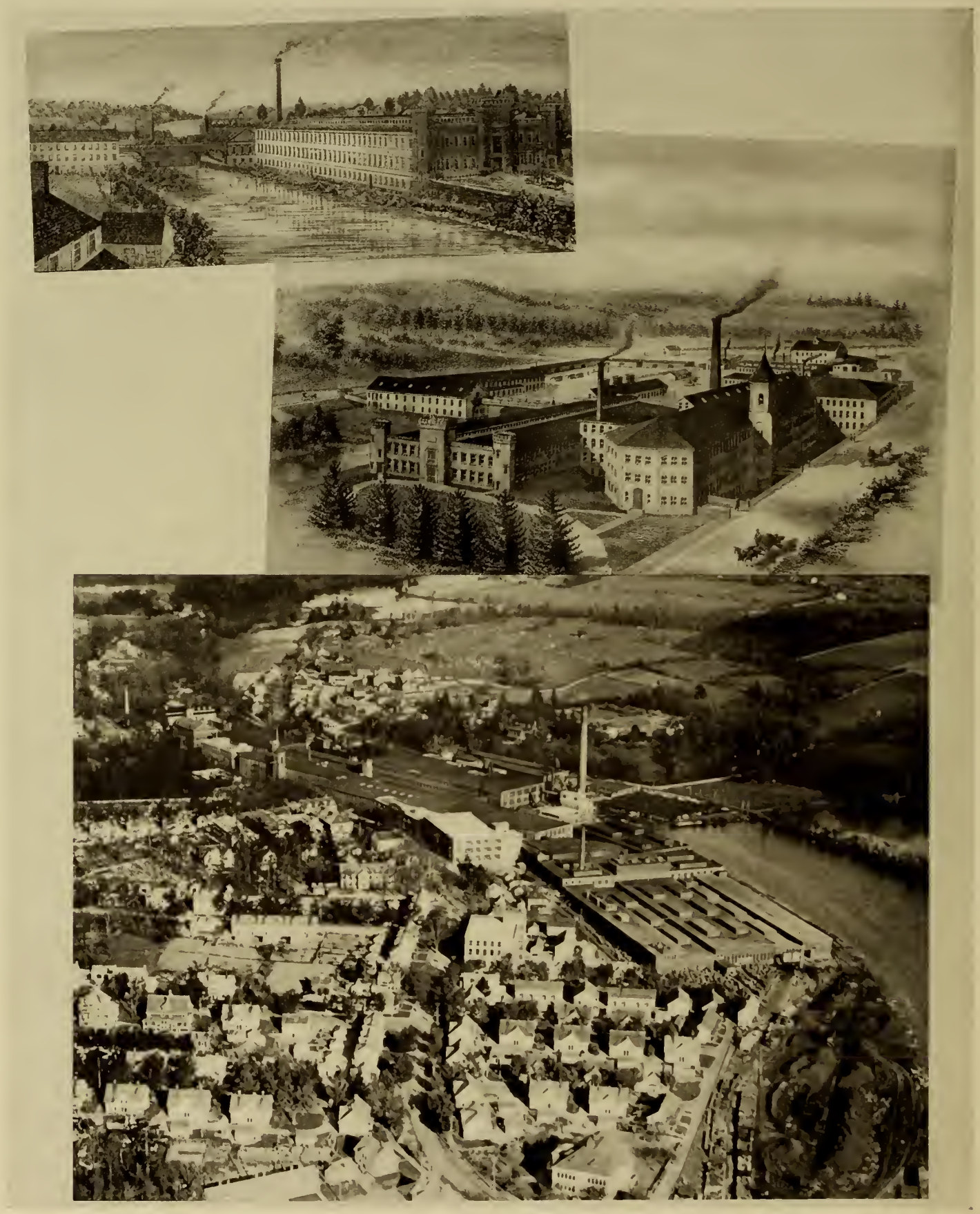
MAIN STREET LOOKING WEST

End View of No. 10 Shop of the Whitin Machine Works

# FOREWORD

*BECAUSE of the size of the works and the numerous processes employed in the manufacture of textile machinery, it is practically impossible for a visitor to adequately comprehend, in the limited time at his disposal, the complete nature and amount of the work which goes on day by day in our shop.*

*It is the aim of this booklet to tell, as simply and concisely as possible, the story of the Whitin Machine Works; to describe the unique industrial village which has been built up around it; and to furnish bits of information which, we hope, will prove of interest to all those who pay us the honor of a visit.*



GROWTH OF THE WHITIN MACHINE WORKS

1. Works in 1848
2. Works in 1880
3. Works in 1925

# The Whitin Machine Works

THE Whitin Machine Works is situated in Whitinsville, within the township of Northbridge, which lies in the south central part of Massachusetts, fourteen miles from Worcester and twenty-nine miles from Providence.

From its humble beginnings in 1831, when John C. Whitin made and patented his improved "Picker," it has grown steadily, until it employs four thousand people in the manufacture and sale of many kinds of textile machinery, and ranks as one of the largest concerns of the textile industry in the world.

Some idea of the Works' dimensions and the amount of work done can be gained from the following facts:

Contains over 40 acres of floor space; has a foundry capacity of 150 tons per day; uses 4,500 tons of steel per year; uses 4 million feet of lumber per year; uses 20,000 tons of coal a year in Power House.

Photo © by Bachrach

E. KENT SWIFT

*Treasurer and General Manager*

## Officials

| | |
|---|---|
| *President* | CHESTER W. LASELL |
| *Treasurer and General Manager* | E. KENT SWIFT |
| *Assistant Treasurer* | WILLIAM H. HOCH |
| *Secretary* | SYDNEY R. MASON |
| *Agent* | LAWRENCE M. KEELER |
| *Works Manager* | GEORGE B. HAMBLIN |
| *Superintendent* | WILLIAM O. ALDRICH |

## Board of Directors

| | |
|---|---|
| E. KENT SWIFT | CHESTER W. LASELL |
| WILLIAM H. HOCH | JOSIAH M. LASELL |
| SYDNEY R. MASON | LAWRENCE M. KEELER |
| JOHN W. LASELL | MINTURN DE S. VERDI |

## Past Officials

| | |
|---|---|
| JOHN C. WHITIN, *Founder and President* | 1831–1882 |
| JOSIAH LASELL, *President* | 1883–1886 |
| *Treasurer* | 1870–1886 |
| G. MARSTON WHITIN, *Treasurer* | 1886–1920 |
| CYRUS TAFT, *Agent* | 1888–1908 |
| WILLIAM H. KENDALL, *Superintendent* | 1847–1864 |
| GUSTAVUS TAFT, *Superintendent* | 1864–1881 |
| HARVEY ELLIS, *Superintendent* | 1881–1891 |
| WILLIAM TAFT, *Superintendent* | 1891–1897 |
| ALBERT H. WHIPPLE, *Superintendent* | 1897–1923 |

## OFFICIALS

1. WILLIAM H. HOCH
2. SYDNEY R. MASON
3. GEORGE B. HAMBLIN
4. LAWRENCE M. KEELER

OFFICIALS

1. CHESTER W. LASELL
2. JOSIAH M. LASELL
3. JOHN W. LASELL
4. MINTURN DE S. VERDI

PAST OFFICIALS

1. JOSIAH LASELL
2. G. MARSTON WHITIN
3. CYRUS TAFT
4. WILLIAM H. KENDALL

PAST OFFICIALS

1. GUSTAVUS TAFT
2. HARVEY ELLIS
3. WILLIAM TAFT
4. A. H. WHIPPLE

ADMINISTRATION BUILDING

The Directors' rooms and private offices of the officials are in the Administration Building, the architecture of which is American Georgian. The interior is spacious, well lighted, and removed from noise of the shop.

The Office of the Works is necessarily divided into many departments. These departments include those of sales, purchasing, specifications, repair, engineering, patent research and machine cataloging, photographing, erecting, auditing, payroll, transportation, manufacturing, employment and production. With the exception of the last five, they are located in the Administration Building. The payroll

MAIN OFFICE

and production departments adjoin the Administration Building. The department of employment is situated more nearly in the center of the Works. A shop hospital and apprentice school are included in this department.

DIRECTORS' ROOM

PAYROLL DEPARTMENT

## EXECUTIVES

1. ARBA S. NOYES, *Paymaster*
2. WILLIAM T. NORTON, *Employment Manager*
3. CHARLES S. SNOW, *Construction Superintendent*
4. RALPH E. LINCOLN, *Office Manager*
5. WILLIAM O. ALDRICH, *Superintendent*
6. ERNEST T. CLARY, *Production Manager*
7. CHARLES T. MOFFET, *Foundry Superintendent*
8. WILLARD E. BURNAP, *Yard Superintendent*
9. GEORGE WILMOT, *Traffic Manager*

NORTHERN SALES FORCE

SOUTHERN SALES AND OFFICE FORCE

SUPERINTENDENT'S OFFICE

In what was the original office of the Whitin Machine Works, the Superintendent and his staff have their headquarters. Here the mechanical problems of the shop are dealt with by the master mechanics and their assistants.

APPRENTICE SCHOOL

HOSPITAL

DRAFTING ROOM

## THE MAKING OF A TEXTILE MACHINE

The textile machine first takes tangible form in the plans and specifications of the designers and draughtsmen.

The corps of men in this picture are kept constantly busy working out new ideas and improvements for textile machinery. Blue prints are made of the draughtsmen's designs and submitted to a committee for correction. It also decides whether the patterns are to be made of wood or iron.

All metal patterns except the very simplest ones are first made of wood. From these wooden patterns a casting is made in the foundry and then sent to the metal pattern workers for machining.

If castings are made directly from a wooden pattern, they must be made an eighth of an inch to the foot larger than the desired size because of the shrinkage of the iron when cooling in the mould. If a wooden pattern is used to make a metal pattern, it must be made a quarter of an inch larger to the foot than the desired size of

EXPERIMENTAL ROOM

PATTERN DEPARTMENT

1. Pattern Loft

2. Metal Pattern Department

3. Wood Pattern Department

the casting. The patterns having been completed, they are stored in the Pattern Loft until needed for production purposes. The foremen requisition the parts needed to complete their order-specifications through the Production Department, which in turn notifies the Pattern Loft Office of the patterns required.

This Loft is the very heart of the whole plant for it contains thousands of patterns which, if once lost or destroyed, could be replaced only with the greatest difficulty and expense.

When these patterns are completed, either in wood or metal, they are sent to the foundry where a trial casting is made. If the results are satisfactory, the patterns are then sent to trained workmen, who make moulds for them in special sand. This process is a very exacting one and requires the skill and adeptness of long experience. Many of the more simple moulds are made by machine, but hand work still plays a large and important part.

During the morning, the moulders and their helpers are busy in the Foundry making sand moulds for the different castings. Other workmen spend their time getting the stacks ready to melt the pig iron, and preparing the ladles in which the molten iron is transported to the moulds.

The early part of the afternoon is known as "pouring-off" time, during which the handling of this

FOUNDRY VIEWS

1. Main Gangway
2. Automatic Ramming of Roller Beams
3. View of Foundry
4. One of our Expert Moulders, Mr. J. T. Kearnan
5. Automatic Bolster Moulding Machine

molten iron requires the utmost care and attention on the part of every man. Great care must also be taken to prevent accidents from the liquid iron.

When the iron has sufficiently cooled, the sand moulds are broken up and the castings removed and taken to the Cast Iron Room to be cleaned. The large castings, together with the frail castings, are placed in the "pickle tub" where the dirt and sand are removed by the chemical action of vitriol. Other

FOUNDRY VIEWS

1. Charging Stacks

2. Pouring off Card Cylinder

3. Pouring off Melting Stack

castings are cleaned with sand blasts, but the largest number of all are thrown into the rattlers where they are cleaned by friction as they roll against one another.

After they have been cleaned, a great many castings have to be softened in order to facilitate their machining, and so they are sent to the Annealing Room.

In this room the castings from the Foundry and the steel parts from the Blacksmith Shop meet. The

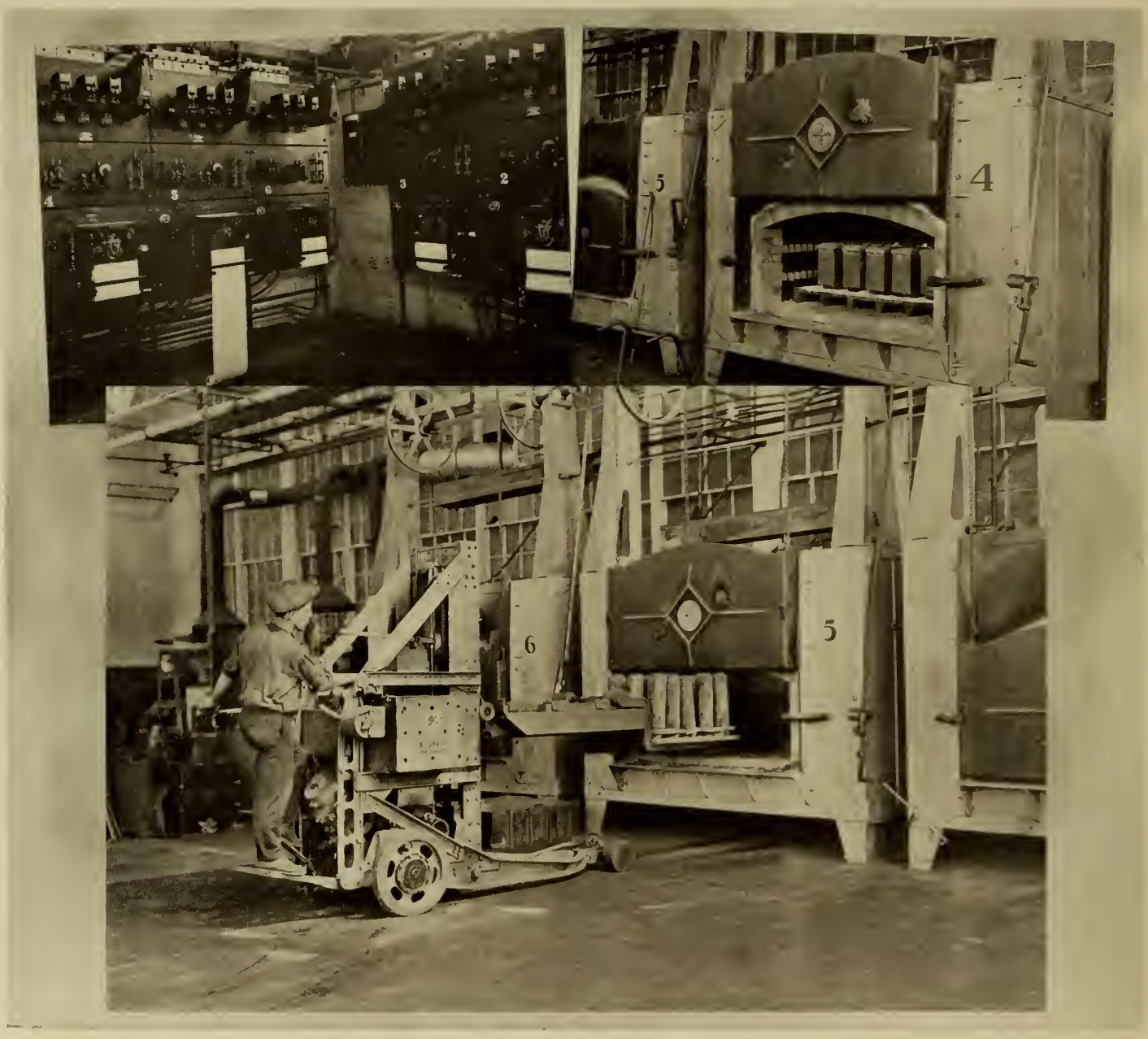
VIEWS IN CAST IRON ROOM

1. Wet Grinding

2. Pickling Tubes 4. Rattlers 3. Snagging Castings

former are annealed in order to facilitate machining and increase production. Some of the latter are case-hardened, a process which leaves a soft core with a hard surface. One process of case-hardening is done by heating them to about 1650°F. in bone black and then quenching them in water.

Some hardening of the high-speed steel is also done in this room for the Tool Department. In this process the parts are heated to about 2300°F. and then quenched in oil.




ANNEALING ROOM

1. Automatic Magnetic Switchboard
2. Electric Annealing Furnace
3. Automatic Lifting Truck Charging a Furnace

The annealed castings are returned to the Cast Iron Room for snagging, a grinding and chipping process which removes the rough edges and the high spots. Afterwards they are sent to the Stock Room where they are stored until requisitioned. The steel parts are returned to the Blacksmith Shop, Stock Room or directly to the foremen who need them. From the Stock Room the parts are distributed to the various machine departments all through the shop, where they are planed, filed, drilled, milled, ground or polished, as the case may be. The Stock Room also contains a paint-dipping department in which thousands of hours of labor are saved by a modern mechanical dipping process.

The Blacksmith Shop or Forge Room is located in a building of its own. It is necessarily the noisiest section of the works. The guide rarely tries to explain the processes of the various hammers, as he finds his voice is lost to the visitor in the incessant din. Conversation, however, can be continued in the tool room of this shop, while the skilled process of die sinking is being inspected.

The stamping out of flyers and rings under the tremendous drop of the hammers upon the white-hot steel, the tapering of the spindles and the rapid finger-like movements of the Ryder hammers have a real fascination for those interested in mechanical as well as spectacular things.

STOCK ROOM

Weighing Castings

Economic Painting by Dipping

A majority of the production departments of the Works are busy machining the castings and steel parts which we have already mentioned. A modest-sized book, such as this one, does not make it possible to picture every important process or department. A few, however, which will appeal to the average visitor's fancy are those of the spindle, ring, bolster, gear, flyer, roll, planer and erecting.

BLACKSMITH SHOP

1. Straightening Spindles on Ryder Hammer

2. Forging Flyers on Drop Hammer

3. View of Blacksmith Shop

MACHINE DEPARTMENTS

1. Automatic Screw Machine Department
2. Drawing Frame Department
3. Milling Department
4. Ring Department
5. Bolster Department
6. Roll Department
7. Bolt and Nut Department
8. Bolster Department

MACHINE DEPARTMENTS

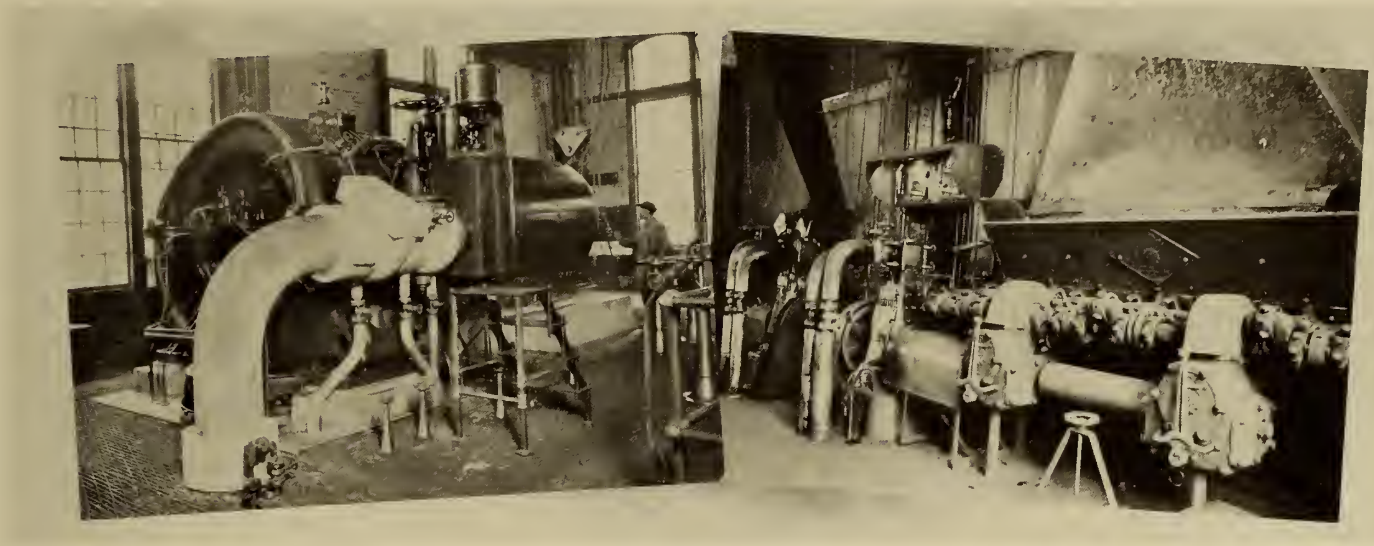
1. Flyer Department
2. Bolt and Nut Department
3. Large Planer Department
4. Spinning Cylinder Department
5. Brush Department
6. Spindle Department
7. Automatic Manufacturing Machine Department
8. Gear Cutting Department

ERECTING DEPARTMENTS

1. Card Erecting Department
2. Card Erecting Department
3. Comber Erecting Department
4. Roving Erecting Department
5. Spinning Erecting Department

The castings and steel parts from the production jobs are routed to the erecting floors where competent fitters completely assemble the machines. The machines are thoroughly tested and inspected to make sure that they meet the Whitin standard of quality.

When the machine arrives at the mill, an especially trained fitter is available through the policy of the Whitin Machine Works in extending its service to its customers, not only until the machine is in operation, but whenever any machine problem asserts itself. For instance, if a problem is greater than the fitter can cope with, the experts specializing on each machine manufactured are available.



POWER PLANT

1. Generating Turbine

2. Automatic Coal Stokers

The power plant generates the necessary electric energy to operate, heat and light the works. This is made possible by the latest equipment in steam turbines and boilers with automatic stokers. Compressed air for the works and power for the electric railway system of the village are also produced. Auxiliary power is available through our transformer houses with the New England Power Company lines.

CARPENTER SHOP

1. Box-Making Department

3. View of No. 26 Shop

2. Wood-Working Machinery

There is considerable wood used in parts of textile machines. These parts, together with the upkeep of the shop and its one thousand tenements in the village, have made it necessary to employ a large number of men on the woodwork and in the lumber yards.

Freight Office

Shipping Floor

FREIGHT DEPARTMENT

Loading Freight Cars

## FREIGHT DEPARTMENT

Incoming and outgoing freight, including the packing, keeps a force of from one hundred to one hundred and fifty men in action.

Freight cars and automobile trucks can be run inside one of the largest of our building units, of which the first floor is entirely occupied by the freight department.

## SHIPPING

The complete machine, after inspection, is then taken apart and packed by the shipping department for the mill.

## INTERNAL TRANSPORTATION SYSTEM

Electric trucks with their trailers move the larger part of the castings from department to department.

Overhead compressed-air hoists and electric cranes facilitate the handling and loading in all departments.

View of Freight Terminus

TRANSPORTATION DEPARTMENT

Hauling Cast Iron Shavings

Hauling Card Cylinders

Electric Motor at Arch of No. 10 Building

First Industrial Electric Motor in Operation in the U. S. A.

Men at Noon-time

## ELECTRIC RAILROAD SYSTEM

The Works are located one mile from the railroad between Worcester and Providence. As a result there has been built an electrified railroad over which freight and passenger cars are run. A regular schedule is maintained.

Handling Coal

Two outstanding achievements are connected with the electric railroad system. It operated the first electric freight motor in America, and, second, it is one of few corporations of its kind paying dividends on a five-cent fare.

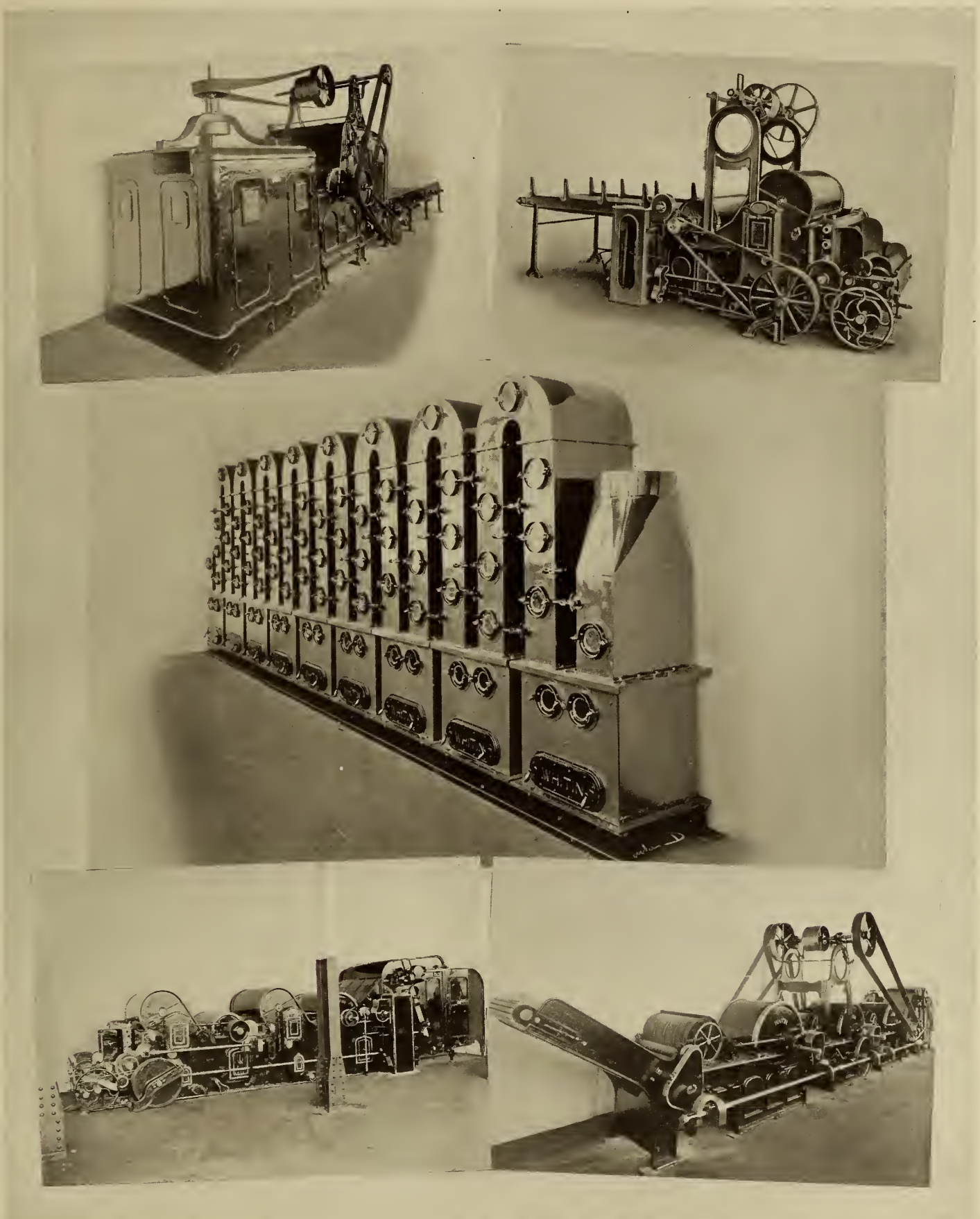
## YARD

The yard has a narrow-gauge electric railroad of its own, as well as a large section of the standard railroad bed. Here coal and lumber for shop and village are stored; also iron ore for the foundry.

Yard View and Yard Office

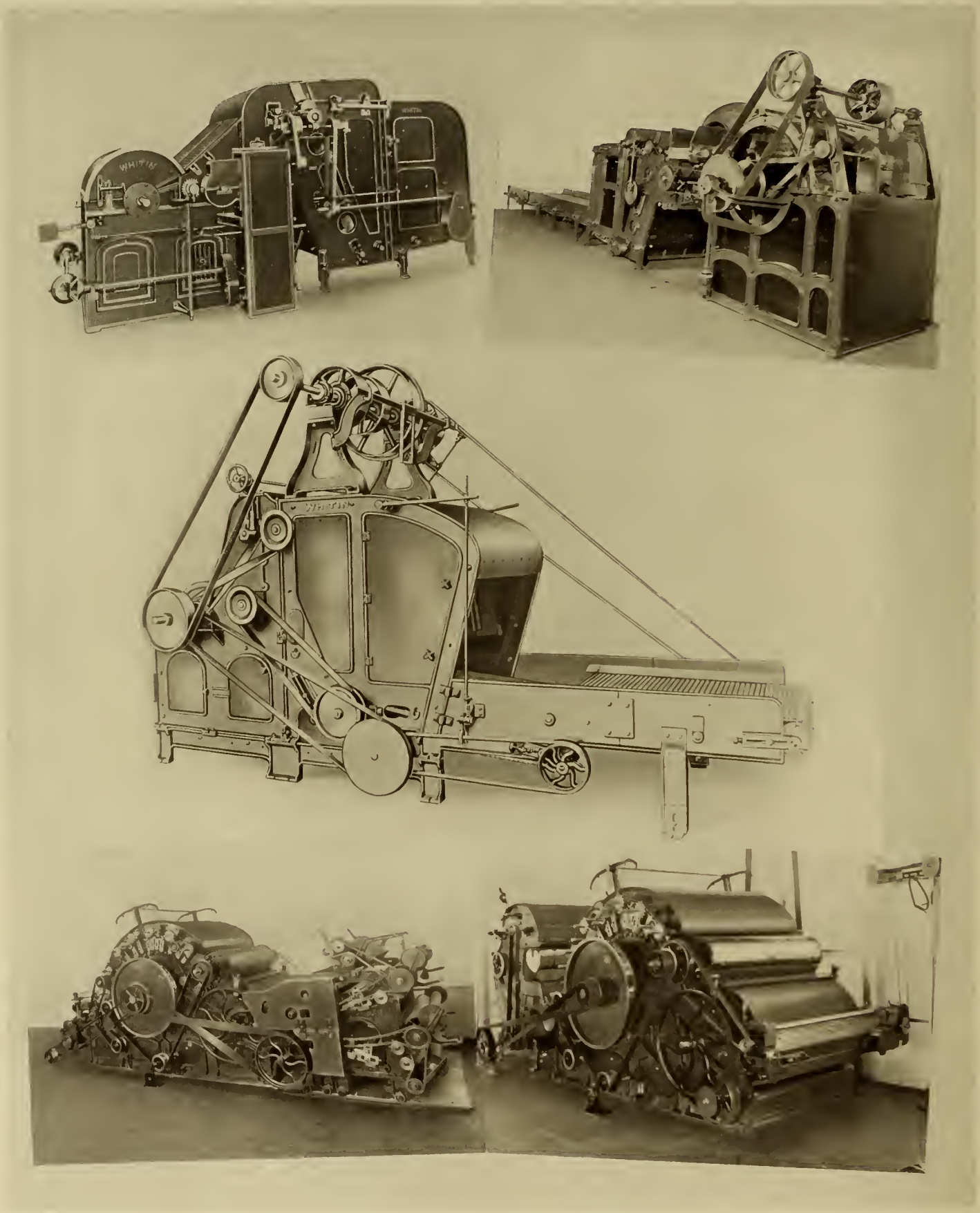
Ice Plant

The yard force has many responsibilities, such as the furnishing of ice and coal to the village, the maintenance of the water works and streets, and the foundation construction of all new building enterprises.



MACHINES

1. Vertical Opener and Bale Breaker
2. Finisher Picker
3. Three-Section C. O. B. Cleaning Machine
4. Two-Beater Breaker with Automatic Feed
5. Three-Section Hard Waste Machine with Automatic Feed



MACHINES

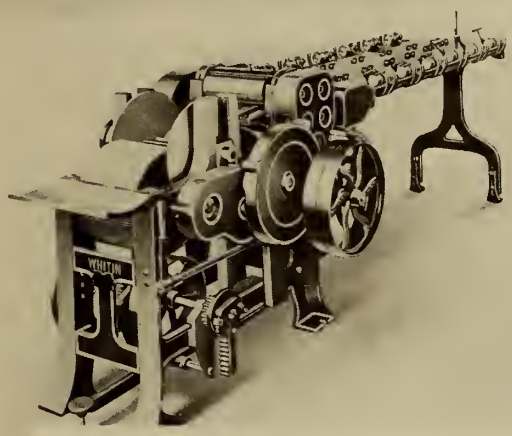
6. Buckley Type Opener with Automatic Feed

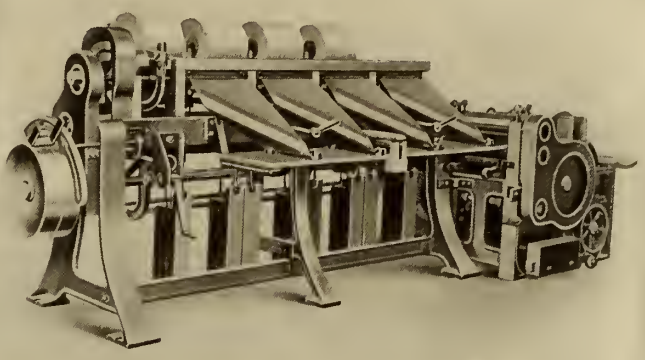
7. Willow with Automatic Feed

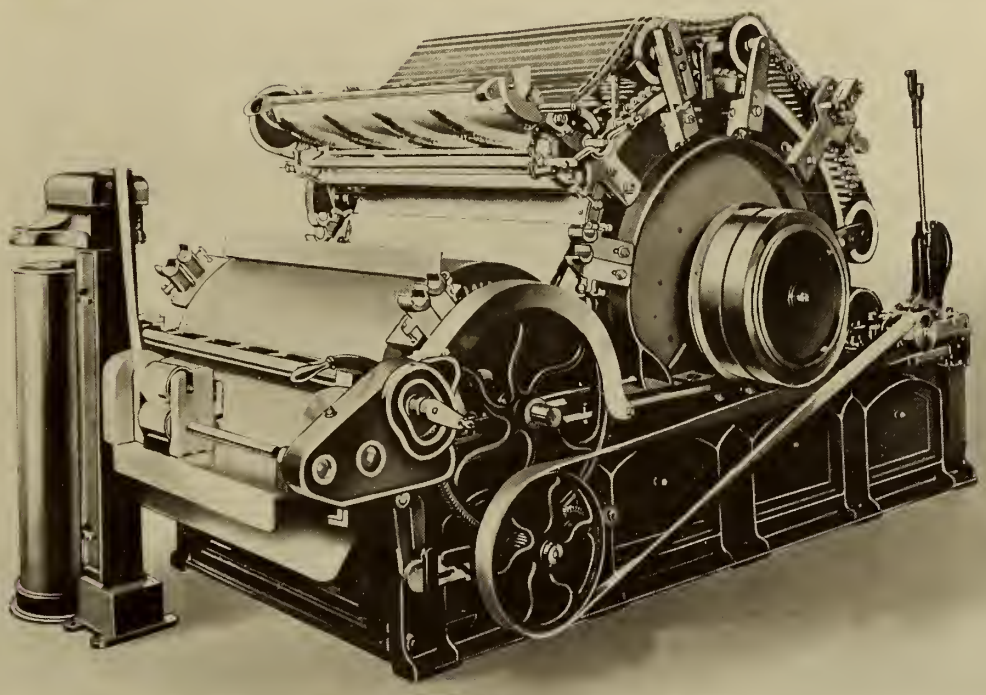
8. Bale Breaker and Feed Apron

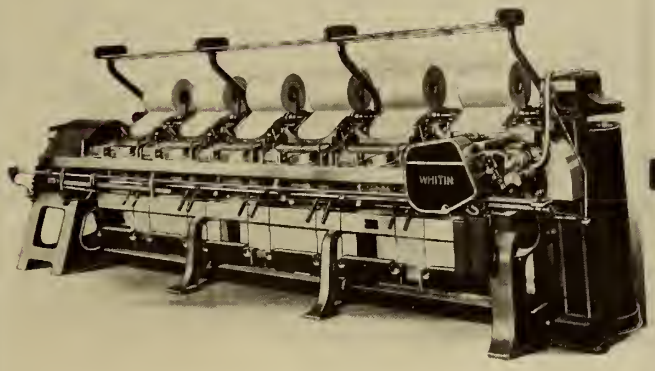
9. Finisher Full Roller Card

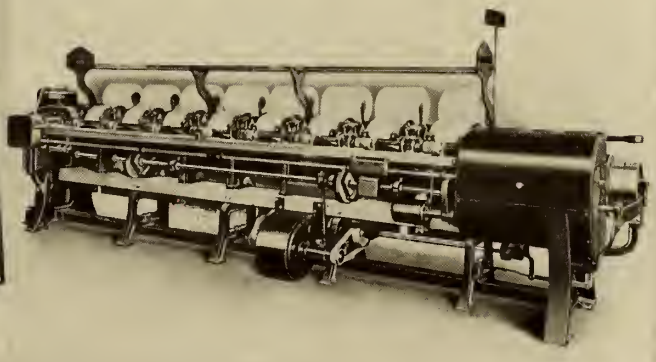
10. Breaker Full Roller Card with Automatic Feed











MACHINES

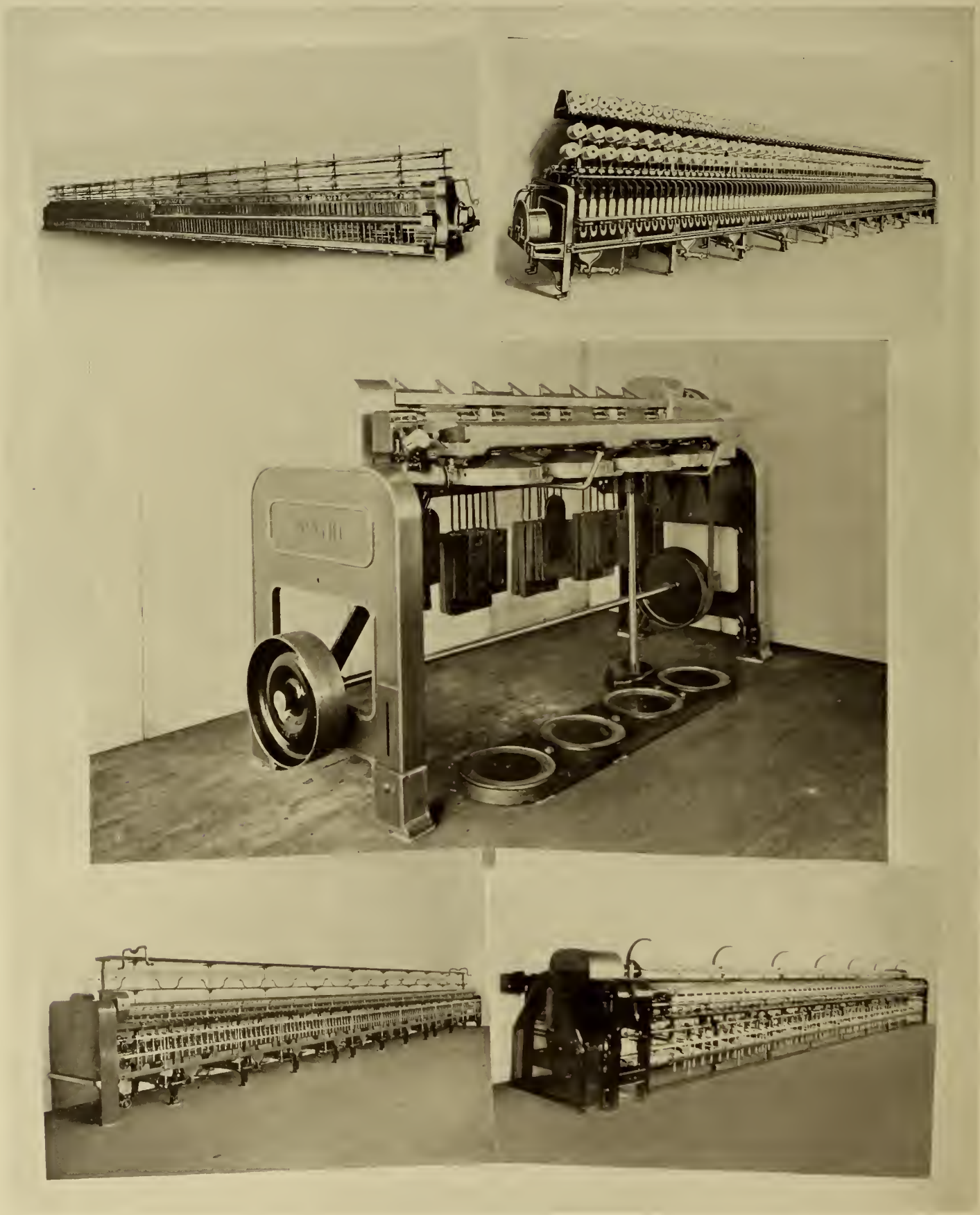
11. Silver Lap Machine

12. Ribbon Lap Machine

13. Revolving Top Flat Card

14. Model "E" Comber

15. Model "D2" Comber



MACHINES

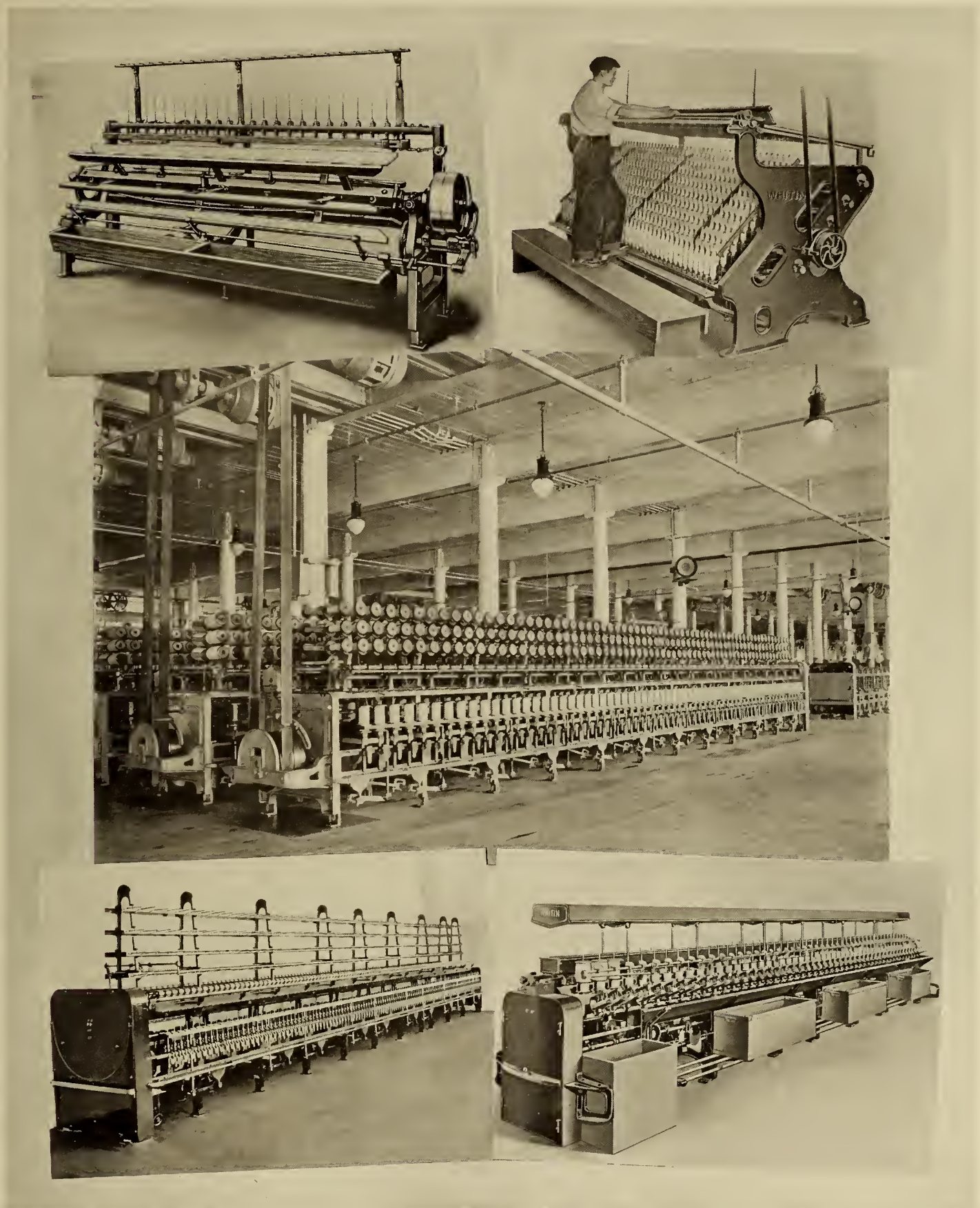
16. Roving Frame

17. Worsted Twister

18. Drawing Frame

19. Spinning Frame

20. Cotton and Wool Waste Spinning Frame



MACHINES

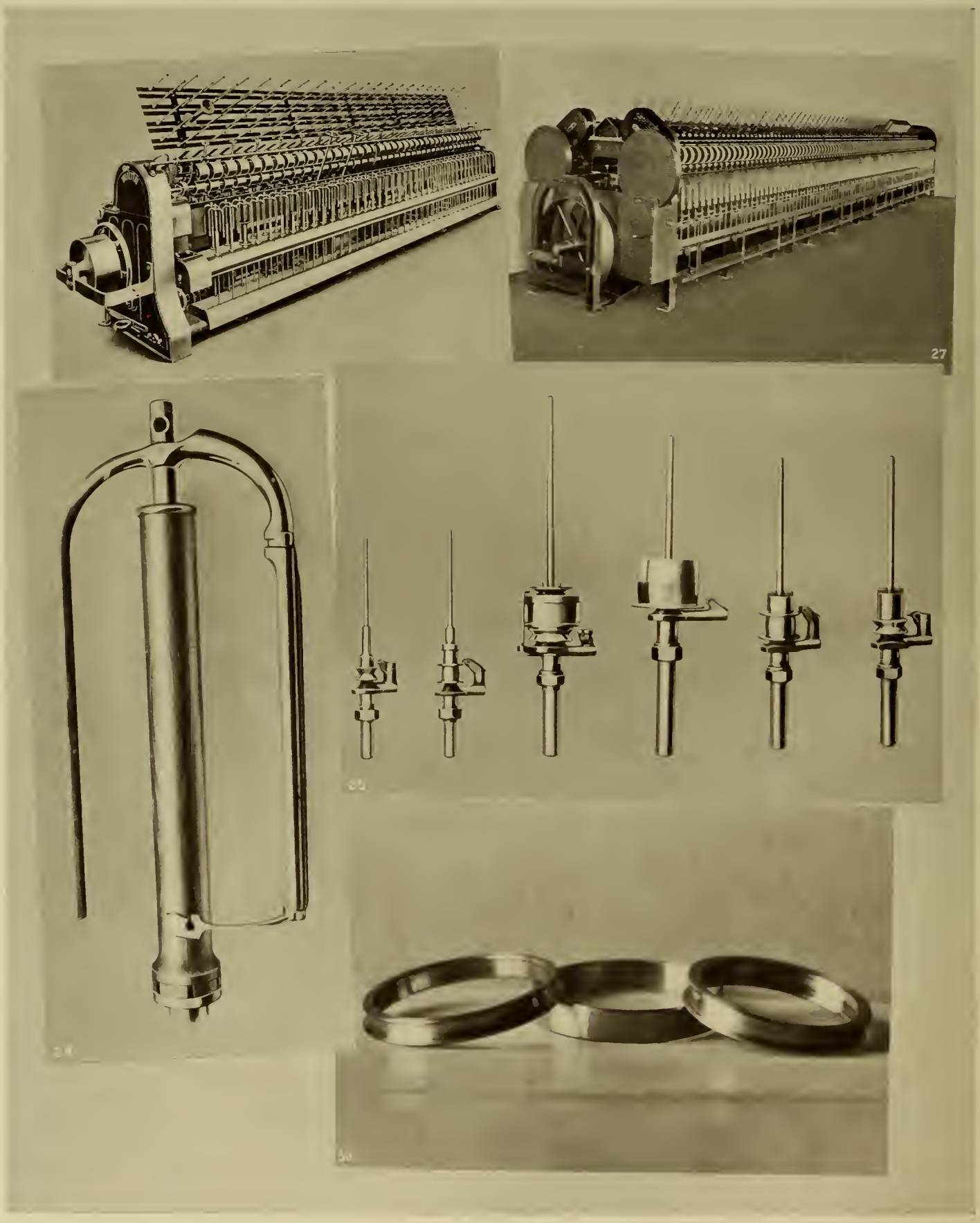
21. Reel

22. Quiller

23. Extra Heavy Tire Yarn Twister

24. Light Twister Frame

25. Spooler



MACHINES

26. Worsted Cone Roving Frame

27. Worsted Cap Spinning Frame

28. Spindles

29. Flyer

30. Spinning Rings

HONOR ROLL

These men have been continuously connected with the Whitin Machine Works for fifty years or more.

## SERVICE STATISTICS

*Continuous Service Records of Employees of the Whitin Machine Works.*

| | |
|---|---|
| 50 or more Years | 25 |
| 40-50 Years | 37 |
| 30-40 Years | 123 |
| 25-30 Years | 76 |
| 20-25 Years | 108 |
| 15-20 Years | 204 |
| 10-15 Years | 220 |
| 5-10 Years | 466 |

*Each employee is presented with a service pin when he is passing one of the above periods of service.*

# The Village of Whitinsville

Whitinsville is the largest of the villages of Northbridge. Originally this village was a part of the Nipmuc Indian Country known as Masconsapong, and was purchased in 1660 by two members of the Massachusetts Bay Colony. This purchase included eight square miles and was bought for twenty-four pounds sterling. A town was built and called Mendon and later divisions were made in which Whitinsville became a part of Uxbridge. In 1772 this district of the northern part of Uxbridge asked to be separated and was incorporated as the Town of Northbridge.

The industrial life of the southern part of Northbridge, later to be known as Whitinsville, is traced back to its beginning when a forge or iron works was established at Mumford Falls in 1727 by Samuel Terry. In 1736 the iron works had three fireplaces, one hammer and an ore yard. After passing through many hands the iron works became the property of James Fletcher. About 1790, a young man from Dedham, Mass., by the name of Paul Whitin, apprenticed himself as a blacksmith in James Fletcher's forge. He married Mr. Fletcher's daughter and later became a partner in the iron works. The manufactured product of the iron works at that time was bar iron made from the pig-iron ore. Then hoes and scythes were made, and during the trading embargo with England, from 1807 to 1809, other farm tools were manufactured, keeping busy three hammers and a power-driven grindstone.

From this humble beginning, Col. Paul Whitin, who held his title and rank in the Massachusetts Militia, developed a cotton mill of 1500 spindles, in which the present Whitin Machine Works can be said to have had its birth. John C. Whitin, a son of Paul Whitin, who became master mechanic of the mill in 1826, was dissatisfied with the crude machinery, and with two lathes and two helpers completed a Picker machine in 1831. In 1832 a patent was granted and the business of textile machinery manufacturing was begun. As a result of the Picker machine and the genius, energy and business ability of John C. Whitin, the original iron forge has today become one of the largest textile machinery works in the world.

Around the works a village has been constructed consisting of fine homes, some privately owned, and others owned by the works. A business section has been built up and has many successful merchants engaged in various trades. The schools and churches, streets, water works and fire department, views of which are shown here, will undoubtedly impress the reader as being remarkable for a town of this size. From the picturesque standpoint, the village fortunately is located among the beautiful hills. Its artificial lakes, storing up water power for the works, help make a beautiful setting. The tenements are rented to employees at very low rates, and are largely modernly equipped with furnaces, electric lights, toilets and baths.

AEROPLANE VIEW OF WEST END OF WHITINSVILLE

A large Memorial Gymnasium has been erected by the Whitin family, in memory of George Marston Whitin, which has since its opening night become the center of the social and recreational activities of the town. The boarding houses, with a rooming capacity of over 500 men, play a large part in finding homes for the unmarried employees and help stabilize the working force. An artificial ice plant with a capacity of 35 tons of ice per day is operated by the Whitin Machine Works, and furnishes ice at a very reasonable rate to the residents of the village.

The fire department of the Whitin Machine Works, developed through the years from the hand-pump stage, is today equipped with the latest motorized high-pressure pumping engine, ladder truck and chemical apparatus. The department has shown its ability to cope with the most menacing of fires, and it lends a sense of security to those who live in the many fine houses of the town. The apparatus is ready to respond at all hours on the moment of the alarm, as firemen are on duty at the fire station. Fire boxes are distributed at close intervals throughout the town.

Located, as the Whitin Machine Works is, fourteen miles from Worcester, a city of a thousand industries, and twenty-nine miles from Providence, it is sometimes wondered at that the Works do not find it difficult to keep its labor content and willing to work so far removed from the attraction of the cities. To answer this, the shop can point with pride to its service records, which showed, when the last census of the shop was taken, February 1, 1925, that over 1500 had worked in the shop more than five years, 26 at that time having records of more than fifty years of service.

RESIDENCES OF OFFICIALS

1. Home of Mr. E. Kent Swift

2. Home of Mr. Sydney R. Mason

3. Home of Mr. Chester W. Lasell

4. Home of Mr. Josiah M. Lasell

RESIDENCES OF OFFICIALS

1. Home of Mr. William O. Aldrich
2. Home of Mr. George B. Hamblin
3. Home of Mr. Lawrence M. Keeler
4. Home of Mr. John W. Lasell
5. Home of Mr. Josiah Lasell, 2d

GEORGE MARSTON WHITIN MEMORIAL GYMNASIUM

1. View from Main Street
2. Lounging Room
3. Front View
4. Swimming Pool
5. Gymnasium

BLUE EAGLE INN

1. View of Inn

2. Dining Room

3. Billiard Room

4. Card Room

Plummer House

Church Street

Overlook House

Overlook Street

Arcade House

D Street

BOARDING HOUSES

Woodland Street

Hill Street

REPRESENTATIVE TENEMENTS

REPRESENTATIVE TENEMENTS

1. Woodland Street looking toward Church Street

2. Arcade Street

3. Corner Woodland and Church Streets

4. A Street, New Village

REPRESENTATIVE TENEMENTS

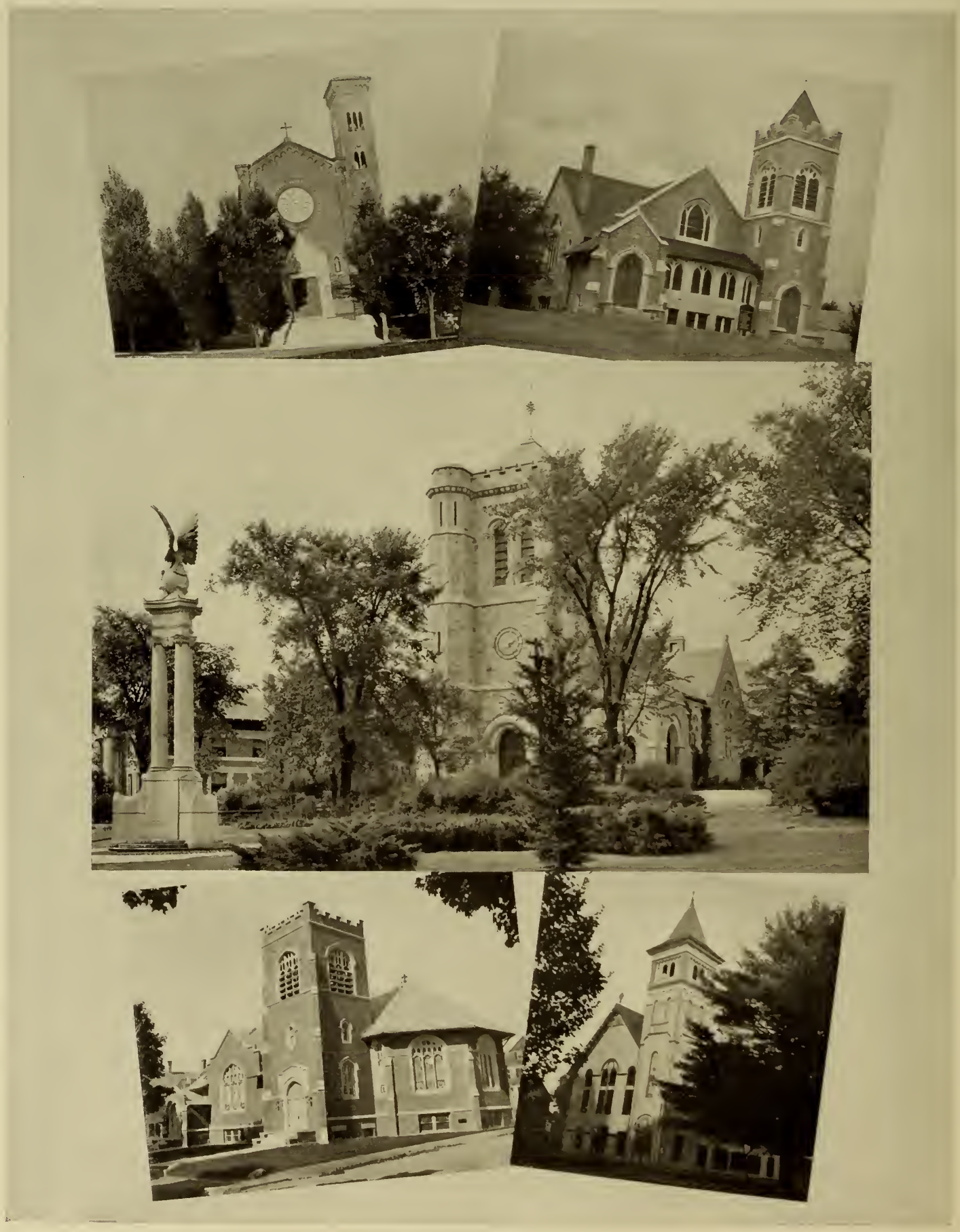
1. Corner Crescent and Arcade Streets
2. Forest Street
3. Leland Road
4. Maple Street
5. East Street

VIEWS OF LAKES AND PUBLIC BUILDINGS

1. Lackey Dam
2. Meadow Pond
3. Memorial Square showing Civil War Memorial at the Left
4. Public Library
5. Whitinsville Hospital

SCHOOLS

1. West End School
2. Junior High School
3. Whitin-Lasell High School
4. Grove School
5. Clark School
6. Grammar School



CHURCHES

1. Catholic Church
2. Methodist Church
3. Congregational Church
4. Presbyterian Church
5. Christian Reform Church

WHITIN MACHINE WORKS GARAGE AND FIRE STATION

1. Building containing the above

2. Hook and Ladder Company

3. Fire Fighting Equipment

The Fire Department in Action

WATER RESERVOIR

In addition to these artificial lakes, it is of interest to note that the water system supplied to the Town of Whitinsville is most complete in every detail, there being two pumping stations of 186,000 gallons an hour capacity, pumping nothing but spring water of the purest analysis. There are 18 miles of water mains.

Scene at the Whitin Machine Works' Farm

GOLF COURSE

1. No. 2 Hole

2. No. 5 Fairway

3. From No. 4 Tee

4. No. 8 Fairway from No. 8 Tee

5. No. 9 Fairway from No. 9 Tee

Last, but not least, from a recreational point of view, is the latest addition to the Town of Whitinsville in the form of a nine-hole Golf Course, with its own Club House, this excellent course having been laid out by the well-known architect, Donald J. Ross. This, needless to say, will probably prove the downfall of many a good man.

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